

Amendments to the Claims

Claim 1-13 (Cancelled).

Claim 14 (Currently Amended). An immersion nozzle for continuous casting of steel, said nozzle comprising:

a wall surface defining an inner hole to allow molten steel to flow through said inner hole;

a swirl vane disposed in said inner hole for generating a swirling flow in the molten steel passing by said swirl vane; and

a refractory layer containing CaO and MgO forming at least a part of said wall surface upstream of said swirl vane, said refractory layer being prepared by controlling a weight ratio of each of CaO and MgO in said refractory layer and an apparent porosity.

Claim 15 (Previously Presented). The immersion nozzle according to claim 14, wherein:

said CaO-MgO-containing refractory layer contains a carbonaceous material;

a sum of MgO and CaO in said refractory layer is at least 65 mass %; and

a weight ratio of CaO to MgO is in the range of 0.4:1 to 2.3:1.

Claim 16 (Previously Presented). The immersion nozzle according to claim 15, wherein said CaO-MgO-containing refractory layer is formed as a tubular-shaped refractory layer having an apparent porosity of 5 to 25 % and a thickness of 3 to 20 mm.

Claim 17 (Previously Presented). The immersion nozzle according to claim 15, wherein said carbonaceous material forms from 1 to 35 mass percent of said CaO-MgO-containing refractory layer.

Claim 18 (Previously Presented). The immersion nozzle according to claim 15, wherein said CaO-MgO-containing refractory layer contains no more than 5 mass % of at least one antioxidant selected from the group consisting of B₄C, SiC, Al, and Si.

Claim 19 (Previously Presented). The immersion nozzle according to claim 14, wherein said swirl vane has a spiral shape and is formed by a twisted tape of refractory material, said tape being twisted at an angle of 80 to 180 degrees to a horizontal plane.

Claim 20 (Previously Presented). The immersion nozzle according to claim 14, wherein:

said wall surface is partially formed with a tier; and

said swirl vane is fixed to said tier.

Claim 21 (Previously Presented). The immersion nozzle according to claim 14, wherein said wall surface has a gas injection port formed therein; said gas injection port being disposed upstream said swirl vane.

Claim 22 (Previously Presented). The immersion nozzle according to claim 14, wherein said CaO-MgO-containing refractory layer covers an entirety of said wall surface including a portion of said wall surface downstream-said swirl vane.

Claim 23 (Previously Presented). The immersion nozzle according to claim 14, wherein said swirl vane is disposed in said inner hole upstream a powder line.

Claim 24 (Previously Presented). The immersion nozzle according to claim 21, wherein:

said wall surface has a slit formed therein behind said refractory layer connected to said gas injection port; and

said wall surface has a gas feed port formed therein connected to said slit, said gas feed port, said slit, and said gas injection port being configured to feed a gas inert relative to steel into the molten steel passing through said inner hole.

Claim 25 (Previously Presented). A method for continuous casting of steel, which comprises:

providing an immersion nozzle according to claim 14; and
flowing molten steel through said immersion nozzle.

Claim 26 (Previously Presented). A method for continuous casting of steel, which comprises:

providing an immersion nozzle according to claim 21;
flowing molten steel through said immersion nozzle; and
injecting inert gas into the molten steel passing through said inner hole via said gas injection port.

Claim 27 (Previously Presented). The immersion nozzle according to claim 14, wherein:

said wall surface is partially formed with a convex portion; and
said swirl vane is fixed to said convex portion.

Claim 28 (Previously Presented). The immersion nozzle according to claim 24, wherein said refractory layer is tube shaped.

Claim 29 (Currently Amended). The method according to claim 25, wherein the molten ~~steel~~ steel is clean.

Claim 30 (Currently Amended). The method according to claim 26, wherein the molten ~~steel~~ steel is clean.

Claim 31 (Previously Presented). The method according to claim 26, which further comprises positioning a molten steel vessel for supplying the molten steel upstream said swirl vane and said gas injection port.